

REMARKS

In this Amendment, Applicant cancels claims 56-82, amends claims 44-47, 49, and 51-55 to more appropriately define the invention, and add new claims 83-107. Upon entry of this Amendment, claims 44-55, and 83-107 remain pending.

In the Office Action, the Examiner rejected claims 44-47, 49, 51, 52, 56-59, 61, 63, 64, 68-71, 73, 75, and 76 under 35 U.S.C. § 103(a) as being unpatentable over Mehnert (U.S. Patent No. 4,319,332) in view of Byrne (U.S. Patent No. 5,554,972) and Jain (U.S. Patent No. 5,629,691); rejected claims 80-82 under 35 U.S.C. § 103(a) as being unpatentable over Byrne in view of Jain and Dabbs (U.S. Patent No. 5,189,425); rejected claims 48, 50, 60, 62, 72, and 74 under 35 U.S.C. § 103(a) as being unpatentable over Mehnert in view of Byrne and Jain and further in view of Reinert, Sr. (U.S. Patent No. 6,033,083); rejected claims 55, 67, and 79 under 35 U.S.C. § 103(a) as being unpatentable over Mehnert in view of Byrne and Jain and further in view of Bass (U.S. Patent No. 5,375,058); and rejected claims 53, 54, 65, 66, 77, and 78 under 35 U.S.C. § 103(a) as being unpatentable over Mehnert in view of Byrne and Jain and further in view of O'Meara (U.S. Patent No. 6,295,007).

Applicant thanks Examiner Tweel for granting an interview with Applicant's on August 2, 2004.

Applicant amends claims 44-47, 49, and 51-55, and add new claims 83-107 to more appropriately define the invention. Support for Applicant's changes to independent claim 44, and new claims 83-107 may be found, for example, in the specification on pages 6-7 and 22-25.

Applicant respectfully traverses the rejection of claim of claims 44-47, 49, 51, 52, 56-59, 61, 63, 64, 68-71, 73, 75, and 76 under 35 U.S.C. § 103(a) as unpatentable over Mehnert in view of Byrne and Jain. Applicant respectfully disagrees with the Examiner's arguments and conclusions, and respectfully submit that a *prima facie* case of obviousness has not been established.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. See M.P.E.P. § 2143.

The Examiner does not show that all the elements of Applicant's claims are met in the cited references, does not show that there is any suggestion or motivation to modify the cited references to result in the claimed invention, and does not show there would be any reasonable expectation of success from so doing.

Prior Art Reference Must Teach or Suggest All the Claim Elements

Applicant respectfully points out that the first requirement for establishing a *prima facie* case of obviousness has not been established: namely, Mehnert, whether taken alone or in combination with Jain and Byrne, does not teach or suggest each and every element of Applicant's claimed invention. This is evidenced, not only by the Examiner's admission of the deficiencies of Mehnert, wherein the Examiner pointed out that "[t]he optical system taught by Mehnert does not contain at least one transmitter located at a

first location and at least one receiver located at a second location corresponding to the transmitter” (Office Action at 2), but also from the arguments that follow.

To begin, Applicant’s independent claim 44, as amended, recites, *inter alia*, a “plurality of transmitters adapted to emit incident beams . . . a plurality of receivers adapted to receive said incident beams . . . wherein each of said plurality of transmitters are adapted to emit said incident beams across at least a portion of said runway, and each of said plurality of receivers being configured to receive one of said incident beams, wherein said plurality of receivers are adapted to indicate a first indication . . . if any of said incident beams are interrupted by an object on or over said runway.”

Mehnert, by contrast, is directed to an apparatus for monitoring surfaces. The system in Mehnert comprises of “a directional beam transmitter” (col. 5:1-2), and “a radiation receiver” (col 5:10-11). A measurement beam is reflected at an object or by the terrain as the background, and “the absence of radiation reflection back to the receiver” allows the system to “obtain significant information as concerns the condition of the monitored or supervised terrain.” (Col 5: 16-34). Mehnert fails to disclose any teaching of at least a “plurality of transmitters” and “a plurality of receivers,” nor does it teach if “incident beams are interrupted” as recited in claim 44. At most, Mehnert describes how the pattern of reflected changes is compared with stored data containing size, shape, configuration, etc. of objects to recognize the measured objects and to classify them. (Col. 8:20-30). This pattern of reflected changes however is not a teaching of at least “incident beams are interrupted” as recited in claim 44. As such, Mehnert lacks any teaching or suggestion of at least the above quoted features of Applicant’s independent claim 44.

Jain also fails to cure the deficiencies of Mehnert when applied to Applicant's independent claim 44. Jain is directed to an airport runway incursion warning system and consists of radar sensor units that generate radar beams to provide coverage of an airport runway. (Abstract). Jain fails to disclose any teaching of at least "plurality of transmitters adapted to emit incident beams . . . a plurality of receivers adapted to receive said incident beams . . . wherein each of said plurality of transmitters are adapted to emit said incident beams across at least a portion of said runway, and each of said plurality of receivers being configured to receive one of said incident beams, wherein said plurality of receivers are adapted to indicate a first indication . . . if any of said incident beams are interrupted by an object on or over said runway" as recited in claim 44.

Byrne also fails to cure the deficiencies of Mehnert and Jain. Byrne is directed to an electronic perimeter warning system to warn workers when the workers or the machinery the workers are operating crosses over the perimeter line established between a transmitter and receiver. (Col. 2: 33-35). The system provides a "perimeter warning 'line' around the edge of a work area" and when the "continuity of the signal is broken by the passage of a person or machinery between the signal transmitting means and signal receiving means," an alarm is activated. (Col. 6: 18-29). Byrne also fails to teach at least a "plurality of transmitters adapted to emit incident beams . . . a plurality of receivers adapted to receive said incident beams . . . wherein each of said plurality of transmitters are adapted to emit said incident beams across at least a portion of said runway, and each of said plurality of receivers being configured to receive one of said incident beams, wherein said plurality of receivers are adapted to indicate a first

indication . . . if any of said incident beams are interrupted by an object on or over said runway” as recited in claim 44.

Therefore, the Examiner's application of Mehnert, Jain, and Byrne as references does not satisfy the tenets of a proper 35 U.S.C. § 103(a) rejection. The Examiner has therefore not met an essential criteria for establishing a *prima facie* case of obviousness, wherein “the prior art reference (or references when combined) must teach or suggest all the claim limitations.” See M.P.E.P. §§ 2142, 2143, and 2143.03.

*Lack of Suggestion or Motivation to Modify or Combine Reference Teachings
for Prima Facie Obviousness*

The M.P.E.P. sets forth:

“Obviousness can only be established by combining or modifying the teaching of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.” “[I]t is necessary to ascertain whether or not the reference teaching would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification.” M.P.E.P. § 2143.01, emphasis added.

Mehnert and Jain cannot be combined due to inconsistencies in the references. Jain mentions in the background the ASDE-3 radar system for airport surface monitoring, which is “relatively expensive” and the need to provide for “an improved radar system that may be used to monitor surface and runway incursion. . . which improves upon the currently-used ASDE-3 radar system.” (Col. 1: 21-28). Jain therefore uses “low cost radars,” and the system described in Jain is “considerably less

expensive” than the ASDE-3 radar system described in the background. (Col. 2: 52-62). Replacing the radar system of Jain with the lasers of Mehnert however, would increase cost, and is inconsistent with the objectives of the Jain system.

Mehnert and Byrne also cannot be combined due to inconsistencies in the references. Mehnert explicitly states that “the equipment . . . is not erected at the periphery or outer contour of the surface, region, space or area to be monitored, in other words, a supervised space, rather is arranged practically at the center or at least within the monitored region.” (Col. 3: 25-29). By contrast, Byrne is a “perimeter warning system . . . for establishing a perimeter warning line around a selected area, such as along apportion of a building roof surface.” (Col. 3: 21-25). Therefore, Byrne and Mehnert teach away from the combination since Byrne is used for perimeter detection and Mehnert is used to monitor a specified inner region.

Furthermore, one skilled in the art would only arrive at the present claimed invention by consulting Applicant’s disclosure, yet “[t]he teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure.” M.P.E.P. § 2142, internal citations omitted. However, Applicant submits that the Examiner has relied on Applicant’s own disclosure in an attempt to provide some teaching or suggestion to combine Mehnert, Jain, and Byrne. Such reliance, however, constitutes improper hindsight reasoning.

Applicant submits that Mehnert, Jain, and Byrne do not provide the requisite motivation to one of ordinary skill in the art to facilitate their combination, from within the references themselves. Applicant also notes that one of ordinary skill in the art must

have this motivation or reason *without the benefit of Applicant's specification* to modify the references.

"Tackling Runway Incursions" in Aviation Week and Space Technology, October 27, 2003 (copy attached), explains how runway incursions are still a significant safety hazard. The article describes how runway incursions are a source of much problems in Europe, the U.S. Canada as well as other countries. The FAA and Eurcontrol have all presented proposals for definitions of "runway incursions" to the International Civil Aviation Organization (ICAO). According to the ICAO, by creating comparable databases, the runway incursion data gathered can be used to guide safety actions. Therefore, if the present invention were obvious to one of ordinary skill in the art, the system described in the present invention would have already been developed, to help solve the problem described in "Tackling Runway Incursions," and the FAA and Eurocontrol would be using it to help deter these incursions .

Moreover, the Examiner alleges that "[i]t would have been obvious to one of ordinary skill in the art at the time of the invention was made to include two different locations for the transmitter and receiver for the purpose of taking advantage of a well-known and common optical configuration" and "it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system of combined references above for use in a runway situation as these systems positively identify objects that are in a predetermined area." Applicant disagrees with the Examiner's allegations and conclusions as an unsubstantiated statement of questionable relevance to Applicant's claimed invention. Applicant further refers the Examiner to the February 21, 2002 Memorandum from USPTO Deputy Commissioner

for Patent Examination Policy, Stephen G. Kunin, regarding "Procedures for Relying on Facts Which are Not of Record as Common Knowledge or for Taking Official Notice." In relevant part, the Memorandum states, "If the examiner is relying on personal knowledge to support the finding of what is known in the art, the examiner must provide an affidavit or declaration setting forth specific factual statements and explanation to support the finding" (Memorandum, p. 3). Further, the Memorandum indicates that the Federal Circuit has "criticized the USPTO's reliance on 'basic knowledge' or 'common sense' to support an obviousness rejection, where there was no evidentiary support in the record for such a finding." Id. at 1.

Applicant submits that "[d]eficiencies of the cited references cannot be remedied by the Board's general conclusions about what is 'basic knowledge' or 'common sense.'"" In re Lee, 61 USPQ2d 1430, 1432-1433 (Fed. Cir. 2002), quoting In re Zurko, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). Should the Examiner maintain the rejection after considering the arguments presented herein, Applicant submits that the Examiner must provide "the explicit basis on which the examiner regards the matter as subject to official notice and [allow Applicants] to challenge the assertion in the next reply after the Office action in which the common knowledge statement was made" (Id. at 3, emphasis in original), or else withdraw the rejection.

Lack of Reasonable Expectation of Success

In addition, regarding the required reasonable expectation of success, as evidenced from previous arguments regarding Mehnert, Jain, and Byrne. Applicant submits that there would be no reasonable expectation of success to be derived from

modifying Mehnert, with Jain, and Byrne, as this would diverge at least from the elements of Applicant's independent claim 44, as noted above. This also demonstrates that the Examiner's reliance on Mehnert, Jain, and Byrne is not sufficient to establish *prima facie* obviousness.

In summary, the Examiner has not met any of the essential criteria for establishing a *prima facie* case of obviousness. Applicant has demonstrated above that the Examiner: (a) has not shown that all recitations of Applicant's claimed invention are taught or suggested by Mehnert, Jain, and Byrne; (b) has not shown any requisite suggestion or motivation to modify Mehnert, Jain, and Byrne to produce Applicant's claimed invention; and (c) has not shown there would be any reasonable expectation of success from modifying Mehnert, Jain, and Byrne in order to produce the present claimed invention. Thus, Applicant submits that the Examiner's reliance on these references fails to establish *prima facie* obviousness. Furthermore, Dabbs, Reinert, Sr., Bass, and O'Meara also fail to cure the deficiencies of Mehnert, Jain, and Byrne.

Therefore, Applicant submits that independent claim 44 is allowable, for the reasons argued above. In addition, dependent claims 45-47, 49, 51, and 52 are also allowable at least by virtue of their respective dependence from allowable base claim 44. The rejection is moot with respect to canceled claims 59-59, 61, 63, 64, 68-71, 73, 75, and 76. Therefore, Applicant respectfully submits that the Examiner should withdraw the 35 U.S.C. § 103(a) rejection.

Applicant respectfully traverses the rejection of claims 80-82 under 35 U.S.C. § 103(a) as being unpatentable over Byrne in view of Jain and Dabbs. This rejection is moot with respect to canceled claims 80-82.

Applicant respectfully traverses the rejection of claims 48, 50, 60, 62, 72, and 74 under 35 U.S.C. §103(a) as being unpatentable over Mehnert in view of Byrne and Jain and further in view of Reinert, Sr. This rejection is moot with respect to canceled claims 60, 62, 72, and 74. The Examiner relies on Reinert, Sr. allegedly for teaching “a lighting mechanism that is embedded into the ground” (office action at 9). Such disclosure however, even if combined with Mehnert, Byrne, and Jain, would still fail to overcome the above described deficiencies of Mehnert, Byrne, and Jain combined. Therefore, claims 48 and 50 are allowable at least due to their dependency from claim 44.

Applicant respectfully traverses the rejection of claims 55, 67, and 79 under 35 U.S.C. § 103(a) as being unpatentable over Mehnert in view of Byrne and Jain and further in view of Bass. The rejection is moot with respect to canceled claims 67 and 79. The Examiner relies on Bass allegedly for a teaching of the system using “triangulation from at least one scanner to detect the position of an airplane on a runway” (office action at 11). Such disclosure however, even if combined with Mehnert, Byrne, and Jain would still fail to overcome the above described deficiencies of Mehnert, Byrne, and Jain combined. Therefore, claim 55 is allowable at least due to its dependency from claim 44.

Applicants respectfully traverse the rejection of claims 53, 54, 65, 66, 77, and 78 under 35 U.S.C. § 103(a) as being unpatentable over Mehnert in view of Byrne and Jain and further in view of O'Meara. The rejection is moot with respect to canceled claims 65, 66, 77, and 78. The Examiner relies on O'Meara allegedly for a teaching of “a laser lighting system” (office action at 11). Such disclosure however, even if combined with

Mehnert, Byrne, and Jain would still fail to overcome the above described deficiencies of Mehnert, Byrne, and Jain combined. Therefore, claims 53 and 54 are allowable at least due to its dependency from claim 44.

New independent claims 83, 95, and 106, while of different scope, recite limitations similar to those in claim 44. New independent claims 83, 95, and 106 are therefore allowable at least for reasons discussed above with respect to claim 44. New dependent claims 84-94, 96-105, and 107 are allowable at least due to their dependencies from allowable independent claims 83, 95, and 106.

Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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By: _____



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AIR TRANSPORT

Tackling Runway Incursions

Eurocontrol and FAA officials are seeking a common definition and more data to target this airport safety hazard

DAVID HUGHES/WASHINGTON

The International Civil Aviation Organization is moving to establish a standard definition of "runway incursion" so that comparable data can be collected and used to guide safety actions.

Runway incursions and accidents are thankfully rare, but when collisions do occur, they usually result in fatalities—so the safety issue is considered significant. However, the lack of large enough databases to underpin the powerful statistical analyses that officials say they need has been a stumbling block.

But before data can be compiled on a global basis, the 20 or more definitions used by various civil aviation authorities worldwide to track incidents must be winnowed to one; otherwise, it's like trying to compare apples and oranges.

Europe, for example, counts an incursion anytime an aircraft enters a runway by mistake, even if there are no other aircraft on the runway or in the vicinity (taking off or landing). In contrast, incursions are recorded in the U.S. only when there's another aircraft or vehicle on the runway, or an aircraft about to land. If no other aircraft or vehicle is present to even suggest the possibility of a collision, the event is considered a "surface incident," which is a less hazardous designation.

At the recent Air Navigation meeting in Montreal, ICAO delegates accepted the FAA and Eurocontrol proposal to standardize on a single definition. The one that has been chosen for review is closer to Canada's and Europe's than to the FAA's version.

Vincent Galotti, chief of air traffic management at ICAO, said the wording agreed to last week by the Air Navigation Commission reads:

"Runway incursion: Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and takeoff of the aircraft."

The definition will now be sent to 88 ICAO members for comment. The final version and a provision that incidents have to be reported will then be incorporated into ICAO's *Procedures for Air Nav-*

igation Service Traffic Management, the air traffic handbook used by most nations.

The FAA also categorizes runway incursions from "D" to "A," with D being the least serious (almost no chance of a collision) and A being one that requires "extreme actions" by those involved to

some informal coordination has been established. And Galotti said ICAO plans to hold two runway-safety seminars a year on this problem, with the first two being on Dec. 1-5 in Singapore and Dec. 15-19 in Cairo. Another part of the global awareness campaign will be the

creation of a runway incursion "tool kit" consisting of a CD ROM with educational material from ICAO supplemented by additional material from the FAA and the International Air Transport Assn. These packets will be sent to all ICAO members.

FAA Runway Incursion Categories

Increasing Severity

Category D	Category C	Category B	Category A
Little or no chance of collision, but meets the definition of a runway incursion.	Separation decreases, but there is ample time and distance to avoid a potential collision.	Separation decreases, and there is a significant potential for a collision.	Separation decreases, and participants take extreme action to narrowly avoid a collision, or the event results in a collision.

avoid a collision (see table). The European classification scheme is slightly different for incursions.

Galotti said ICAO is beginning work now on a standard categorization for review by members. The classification may build on the FAA categories, but would obviously have to include situations where only one aircraft is involved.

WITH THE CREATION of comparable databases, it will be possible to determine if runway incursions are as big a problem in Europe as they are in the U.S. "We can't compare numbers, so we don't know. The plan is to get some uniform idea of where the problems are, and if they are growing or shrinking," said Frank Price, a U.S. air navigation commissioner based at ICAO headquarters in Montreal.

He added that the goal is to find "precursors," as does the Global Aviation Information Network (GAIN) program that involves collection of safety data for analysis and information sharing. Generally speaking, air-safety experts believe runway incursions could become an even bigger issue when air traffic resumes its traditional healthy growth rate.

Since major efforts are already underway in the U.S., Europe, Canada and elsewhere to reduce runway incursions,

Bill Davis, director of the FAA's runway safety program, said Administrator Marion Blakey considered the need for a standard definition of runway incursion important enough to include it as a goal in the agency's five-year plan.

"We don't view incursions as a domestic problem—they're a global problem," he said. Davis noted that it's not just the FAA, but other civil authorities as well, that are interested in formulating a standard definition, classification scheme and comparable databases.

In another effort, inspired in this case by the Commercial Aviation Safety Team (CAST) working group, the FAA has just completed two new advisory circulars on taxi operations. CAST includes government, industry, manufacturing and union representatives. The circulars are AC-120-74A for aircraft flown by two pilots and AC-91-73A for aircraft flown by single pilots. The first one recommends that air carriers institute new standard operating procedures to help reduce runway incursions—including many reminders of often used, but easily overlooked, techniques.

AC-120-74A suggests that aircrews turn on lights (except for landing lights) to define the aircraft's silhouette when taxiing onto the runway to hold or for